



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : E04B 9/06</p>	<p>A1</p>	<p>(11) International Publication Number: WO 97/06321</p> <p>(43) International Publication Date: 20 February 1997 (20.02.97)</p>
<p>(21) International Application Number: PCT/BE96/00083</p> <p>(22) International Filing Date: 8 August 1996 (08.08.96)</p> <p>(30) Priority Data: 9500682 8 August 1995 (08.08.95) BE</p> <p>(71) Applicant (for all designated States except US): CHICAGO METALLIC CONTINENTAL NV [BE/BE]; Oud Shuisstraat 5, B-2110 Wijnegem (BE).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): BAETEN, Ton [NL/NL]; Dotterbeemd, NL-5551 GH Dommelen (NL).</p> <p>(74) Agents: PIERAERTS, J. et al.; Gevers Patents, Holidaystraat 5, B-1831 Diegem (BE).</p>		<p>(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), TJ, TM, TR, TT, UA, UG, US, UZ, VN; ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p>
<p>(54) Title: VARIOUS METHODS FOR MAKING A PROFILE FOR SUPPORTING CEILING PLATES AND FOR THE THUS OBTAINED PROFILES</p> <div data-bbox="381 1165 1193 1732" data-label="Image"> </div> <p>(57) Abstract</p> <p>The invention relates to a method for making a profile for supporting ceiling plates and the like; which profile shows a continuous fixation strip, a body and wings upon which the plates or the like rest, characterised in that to form the body of the profile, it is started from at least one metal band wherein in series of incision are applied in the longitudinal, respectively transversal direction, whereafter the metal band is pulled in the transversal, respectively the longitudinal direction, to an open structure (7, 7').</p>		

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"Various methods for making a profile for supporting ceiling plates and for the thus obtained profiles".

This invention relates to a method for making a profile for supporting ceiling plates and the like, which profile shows a continuous fixation strip, a body and wings upon which the plates or the like rest.

The object of the invention is to develop a method that allows to make profiles of the said type that are characterised by an up till now in that field never attained material saving and that, despite their lighter weight, still have a sufficient inertia.

To make this possible according to the invention, it is started, to form the body of the profile, from at least one metal band wherein a series of incisions are applied in the longitudinal, respectively transversal direction, whereafter the metal band is pulled in the transversal, respectively the longitudinal direction, to an open structure.

According to a possible embodiment the continuous fixation strip and the above mentioned wings are formed from the above mentioned metal band whereafter the metal band, wherein series of incisions were provided in the longitudinal direction, is pulled in the transversal direction to an open structure.

Still according to this embodiment use is made of two metal bands that show applied incisions in the longitudinal direction and each metal band shows a wing for supporting a plate or the like and a wing for making the above mentioned continuous fixation strip, both the metal bands are placed back to back against each other, above mentioned wings are covered with a

finishing strip and finally the part of the metal strip that forms the body is pulled transversally with respect to said incisions.

5 According to a variant, use is made of two metal bands that show applied incisions in the longitudinal direction and each metal band shows a wing for supporting a plate and a wing for making above mentioned continuous fixation strip, the portion of the metal band that forms the body is pulled transversally with respect
10 to said incisions and only after that two thus processed metal bands are placed back to back against each other and said wings are covered with a fixation strip.

The invention also concerns the obtained profiles according to the different methods.

15 Further details and advantages of the invention will appear from the following description of different methods for making a profile for hanging up ceiling plates and of the thus obtained profiles. This description is only given by way of example and does not
20 limit the invention. The reference numerals refer to the hereto annexed figures.

Figures 1 to 4 illustrate the consecutive steps for forming a profile according to the invention.

25 Figures 5 to 8 illustrate a variant of the method for making a profile.

Figures 9 to 11 illustrate a variant of the method for making a profile.

Figures 12 to 14 illustrate a method for making a profile according to yet another variant.

30 Figures 15 to 17 illustrate a method for making a profile according to another technique.

Figures 18 to 20 relate to a last variant for making a profile with an open structure.

35 The method explained by the different figures makes it possible to make very light profiles

that show a sufficient inertia, such as already explained in the introduction.

Different steps for the obtention of such profiles that are essentially characterised by their open structure are described hereafter.

According to a first method, explained by figures 1 to 4, and that can be considered as very similar to the method according to figures 5-8, one starts from a metal band 1 wherein parallel series of incisions 2 are applied in the longitudinal direction of this strip.

The incisions only appear in the area that will form the body of the profile in the following step.

Referring to figure 2 one notices that the longitudinal edges of the metal band are bent in order to form the wings 3 and 4.

The next step (figure 3) consists in assembling two identical metal bands placed back to back against each other with their wings 3 and 4 and the connection of these two metal bands by means of finishing strips 5 and 6. The finishing strip 5 makes, with the wings 3, a continuous fixation strip for supporting the finished profile. The finishing strip 6 forms with the wings 4 a means to support the ceiling plates or the like.

The metal band in its finished condition such as illustrated in figure 3, is then pulled in the transversal direction of the strip 1 to form a profile whereof the body shows an open structure such as shown in figure 4. The open structure of the body of the profile is shown in figure 4 with the reference 7.

The figures 5 to 8 are related to a method that is narrowly connected with the just described embodiment. Here also it is started from a metal band 1 with longitudinally applied series of incisions 2 (figure 5).

The following step consists in making the wings 3 and 4. Immediately thereafter the metal band is pulled transversally to make a profile whereof the body 7 shows an open structure.

5 By placing two metal bands with an open structure back to back against each other such as shown in figure 7, the structure according to figure 8 appears. At this stage a finishing strip 5, respectively 6, is each time slit over the wings 3 and 4 of both
10 metal bands with an open structure. The finishing strip can also be applied by bending a material strip over the wings 3 and 4. This material can be metal or a synthetic material.

15 A profile that lightly deviates from the obtained profiles according to the just described method is illustrated by the figures 9 to 11. The profile illustrated in figure 11 is generated from a single strip 1 with rows of incisions 2.

20 Above and underneath wings 4', respectively 4" are formed from the metal band 1. In the following step the open structure illustrated by figure 11 is formed by transversally pulling the metal band with respect to the incisions 2. The profile described here is thus single and is not generated from the assembling
25 of two identical profiles such as was the case for the method described by figures 1-8.

The method described by figures 12 to 14 shows how to proceed from a single metal band 1 wherein an incision 2 is applied in two areas. In a following
30 step (figure 13) the metal strip 1 is bent in such a way that the areas wherein the incisions 2 appear are precisely superposed whereas the continuous hollow chamber 8 and the wings 4 are formed by the bending. The finishing strip 6 is applied over these wings. After
35 this manipulation the metal band 1 is pulled transversally in the longitudinal direction wherein the inci-

sions 2 extend, in order to form the already earlier described open structure 7.

A variant of the method according to the invention that makes it possible to simultaneously form the open structure from the metal band with the necessary wings, is explained by figures 15 to 17.

Once again it is proceeded from a metal band 1 with rows of incisions 2 extending in the transversal direction of the strip.

The remarkable of the method which is explained here by figures 15 to 17 is related to the above and underneath making of the equivalent of the already earlier described wings 4, 4' and 4". The wings are generated here by the application of flanges 9, respectively 9' in the metal band 1 transversally with respect to the direction wherein the incisions 2 extend. Above and underneath the flanges 9, respectively 9', are bent every other time along the left and the right of the area wherein the body of the profile extends. Over the flanges 9, respectively 9', finishing strips 5, respectively 6 are applied. This can occur i.e. by bending a metal band or a plastic band over these flanges.

In the following step the desired open structure 7 is formed by the necessary traction force exerted transversally with respect to the direction wherein the incisions 2 extend on the metal band.

A last variant that makes it possible to process the profile to an open structure is explained by the figures 18 to 20. Contrarily to the up till now described techniques, incisions 2' are applied to the metal band 1 and in the transversal direction of the profile, which profile shows a greatly reduced length. The making of the open structure 7' (figures 19 and 20) occurs by exerting on the metal band 1 with the transversal incisions 2' a traction force in the longitudinal

direction of the profile that generates a metallic open structure such as illustrated in figure 19. Along one extremity this open structure shows surfaces 10 whereof the form and the dimensions are dependent on the applied technique for the generation of the used open structure.

With these surfaces 10 the open structure 7' is connected with the continuous fixation strip 11 in the form of a hollow profile. Said surfaces can be pressed into said profile 11 and fixed herein. The open structure 7' will be formed, with its opposite free edge, by the tops 12 of the diamonds or rectangles that characterise the open structure, connected with a lengthwise profile 13. This profile 13 is covered with a finishing strip 6 and thus forms the two wings whereon the ceiling plates or the like will rest.

From the above mentioned given description of the method for making a profile for hanging up ceiling plates and the like and from the therefrom generated profiles it appears that an up till now never attained weight saving can be obtained, whereas the generated profiles by application of the different methods will however have the desired inertia.

It is clear that the invention is not limited to the hereabove described embodiments and that changes can be brought for so far that they fall in the scope of the hereto annexed claims.

CLAIMS

1. A method for making a profile for supporting ceiling plates and the like, which profile shows a continuous fixation strip, a body and wings upon which the plates or the like rest, characterised in that to form the body of the profile, it is started from at least one metal band (1) wherein a series of incisions (2, 2') are applied in the longitudinal, respectively transversal direction, whereafter the metal band is pulled in the transversal, respectively the longitudinal direction, to an open structure (7, respectively 7').

2. A method according to claim 1, characterised in that the continuous fixation strip and the above mentioned wings (3, 3' - 4, 4') are formed from the above mentioned metal band (1) whereafter the metal band (1), wherein series of incisions (2) were provided in the longitudinal direction, is pulled in the transversal direction to an open structure (7).

3. A method according to claim 2, characterised in that use is made of two metal strips (1) that show applied incisions (2) in the longitudinal direction and each metal band (1) shows a wing (3, respectively 4) for supporting a ceiling plate or the like and a wing for making the above mentioned continuous fixation strip, both the metal bands (1) are placed back to back against each other, above mentioned wings (3, 4) are covered with a finishing strip (5, 6) and finally the part of the metal band that forms the body is pulled transversally with respect to said incisions.

4. A method according to claim 2, characterised in that use is made of two metal bands (1) which show applied incisions (2) in the longitudinal direction and each metal band shows a wing (4) for supporting a ceiling plate and a wing (3) for making above mentioned continuous fixation strip, the portion the metal band that forms the body is pulled transversally with respect

to said incisions (2) and only after that two thus processed metal bands (1) are placed back to back against each other and said wings (3, 4) are covered with a fixation strip (5, respectively 6).

5 5. A method according to claim 2, characterised in that use is made of a single metal band (1), that shows applied incisions (2) in the longitudinal direction, that in a consecutive step the metal band is provided with wings (4', 4'') which are formed from the
10 metal band and which extend alongside of the body of the metal band, whereafter, the metal band (1) is pulled transversally with respect to the incisions (2) applied in the longitudinal direction.

15 6. A method according to claim 1, characterised in that the body of the profile is generated from a first metal band (1') wherein incisions (2') are applied in the transversal direction of said metal band, whereafter a traction force is exerted in the longitudinal direction of the metal band (1') to generate an open
20 structure (7') that is connected on one hand with a continuous fixation strip (11) and on the other hand with a second metal band (13) that forms the wings whereon the ceiling plates or the like rest.

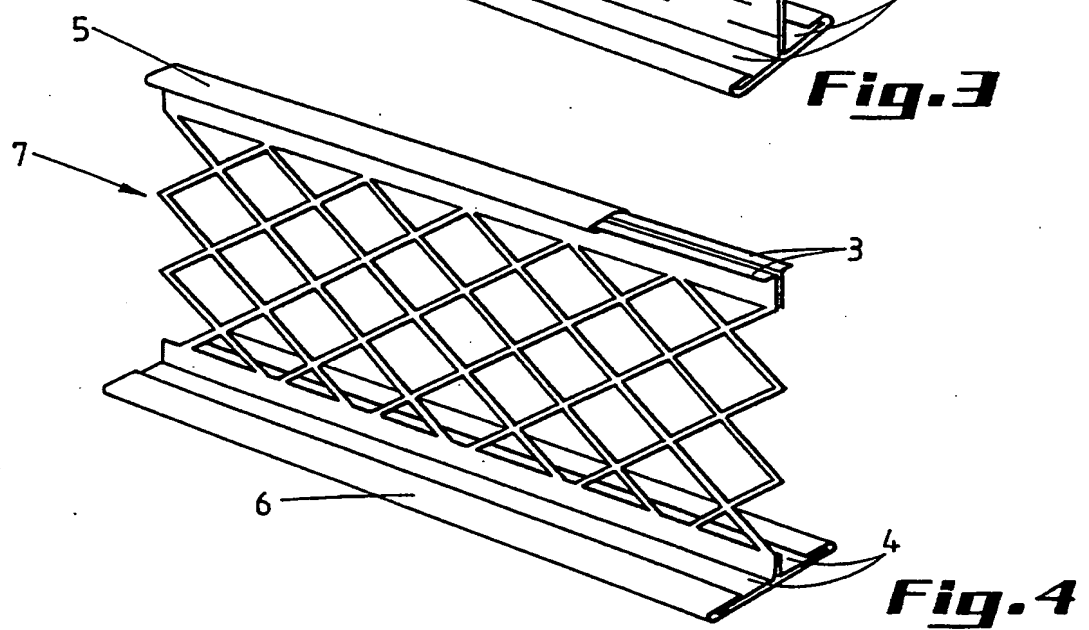
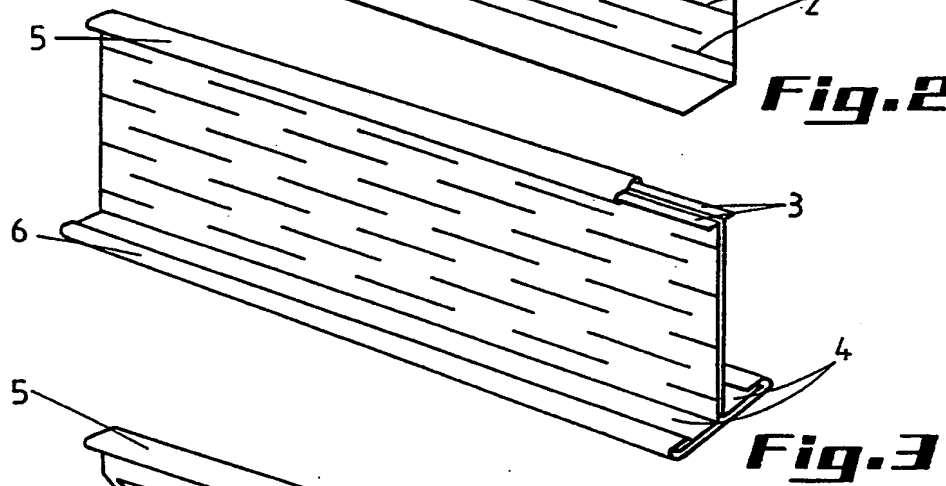
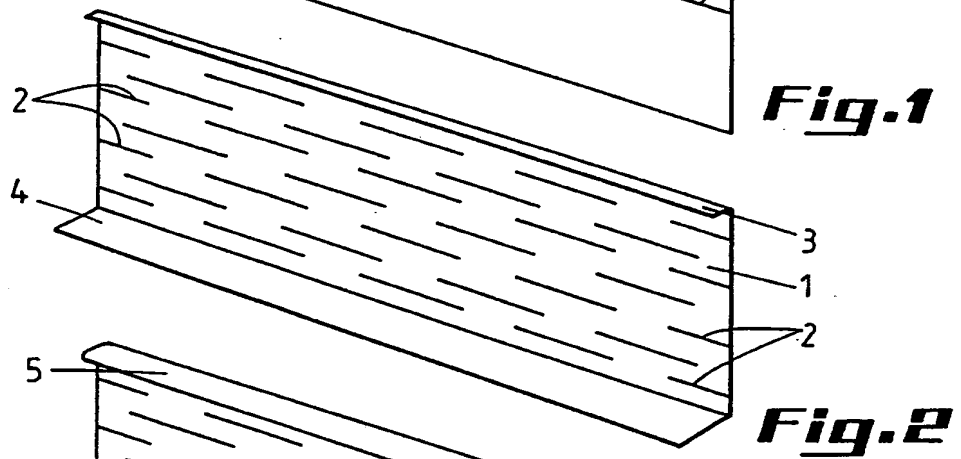
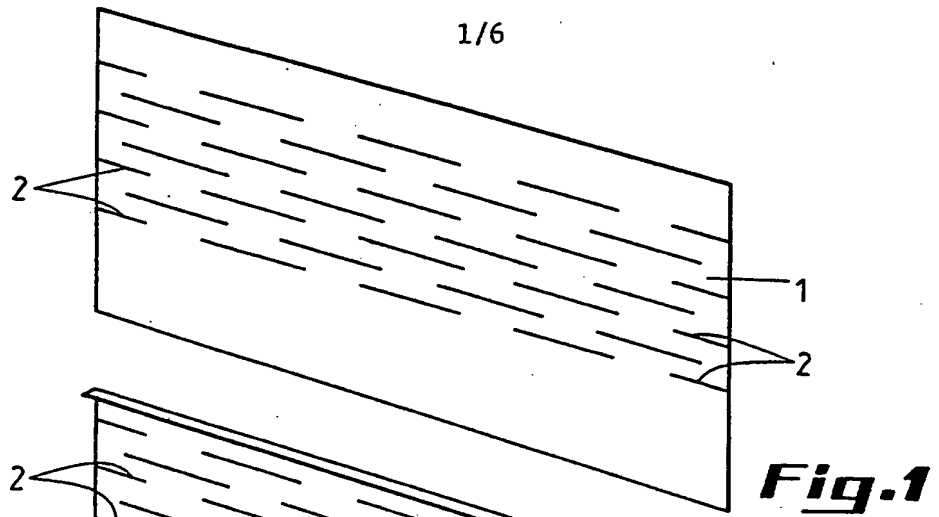
25 7. A profile for supporting ceiling plates and the like, composed of a body, wings for supporting the ceiling plates and means with which the profile can be hung up, characterised in that the body has a metallic open structure (7) generated by application of the method according to claim 1 and said wings are formed by
30 metal strips extending alongside of the body stretching.

35 8. A profile according to claim 1, characterised in that the body of the profile is composed of two metal bands (1) placed back to back against each other with an open structure (7) and the means with which the profile is hung up is composed by two wings

(3, 4) extending in opposite directions which are covered by a finishing strip (5, 6).

5 9. A profile according to claim 1, characterised in that the body of the profile is composed of two metal bands (1) placed back to back against each other generated by an open structure (7) from a same metal band and the means with which the profile is hung up is formed by a continuous hollow chamber (8).

10 10. A profile according to claims 1 or 6, characterised in that the body thereof has an open structure (7') formed by a metal band and the body is connected in the longitudinal direction, on one hand by a hollow profile (11) and on the other hand with a lengthwise profile (13) that is covered with a finishing
15 strip (6).



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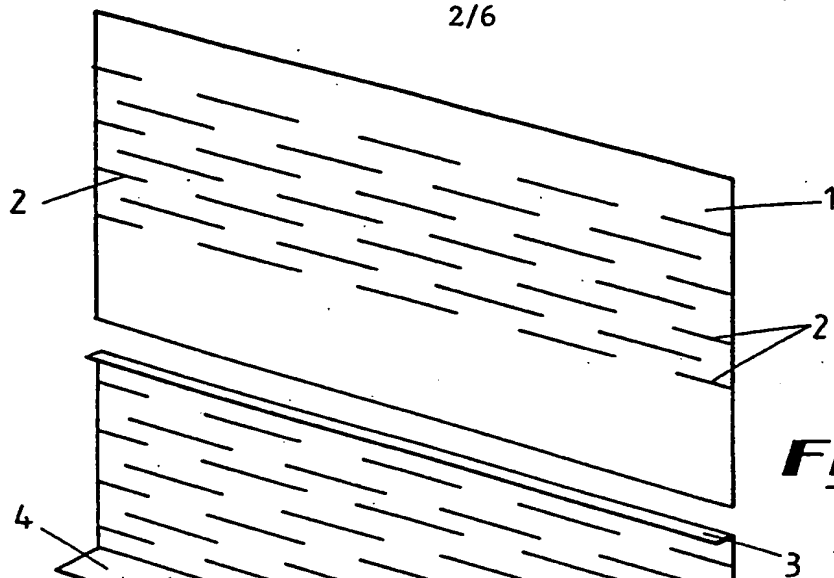


Fig. 5

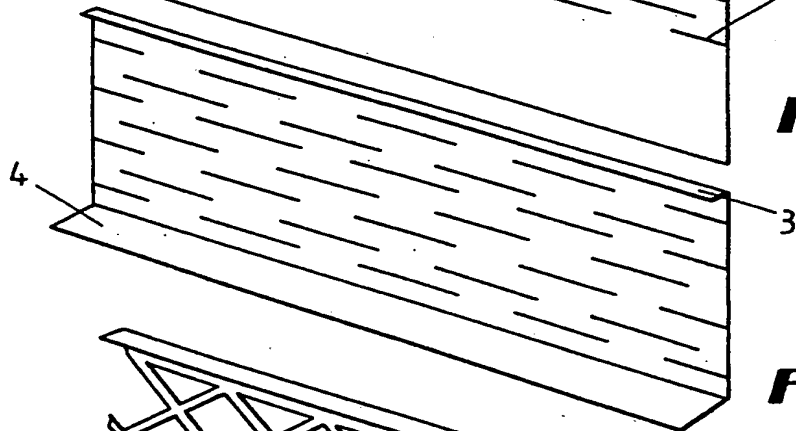


Fig. 6

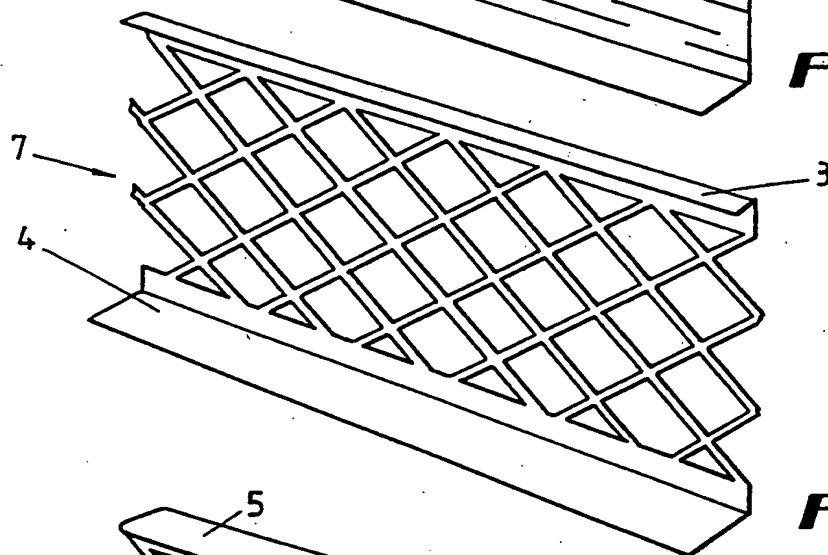


Fig. 7

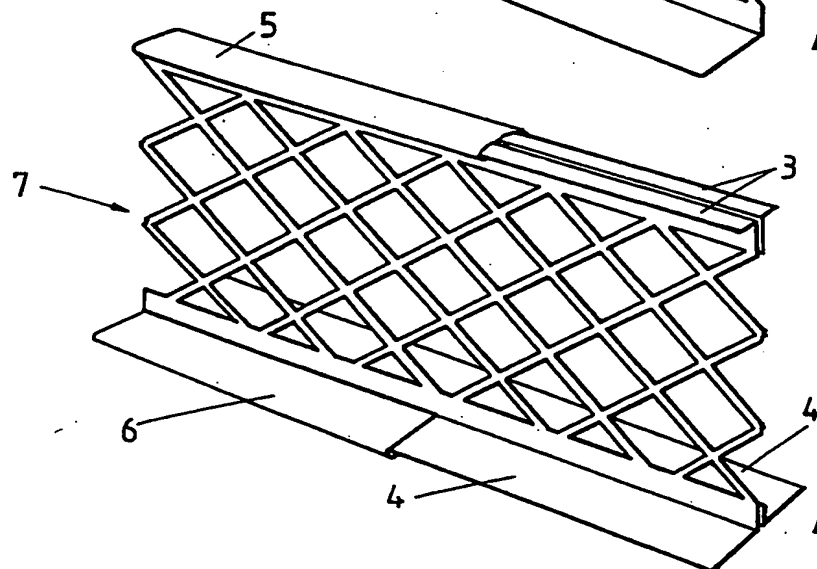


Fig. 8

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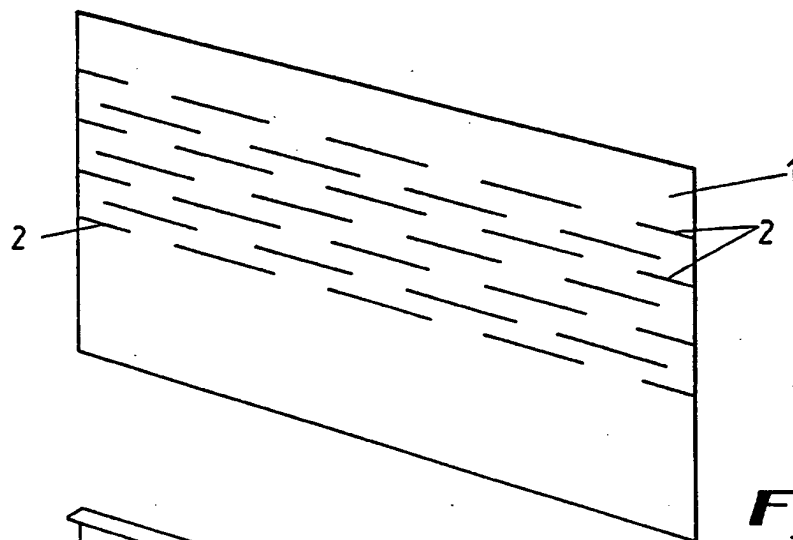


Fig. 9

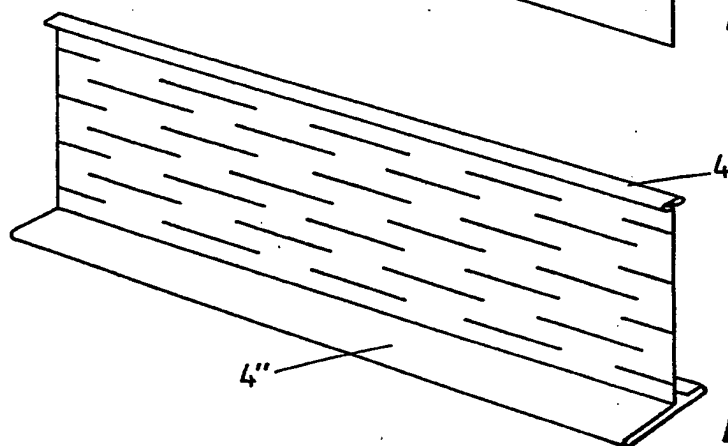


Fig. 10

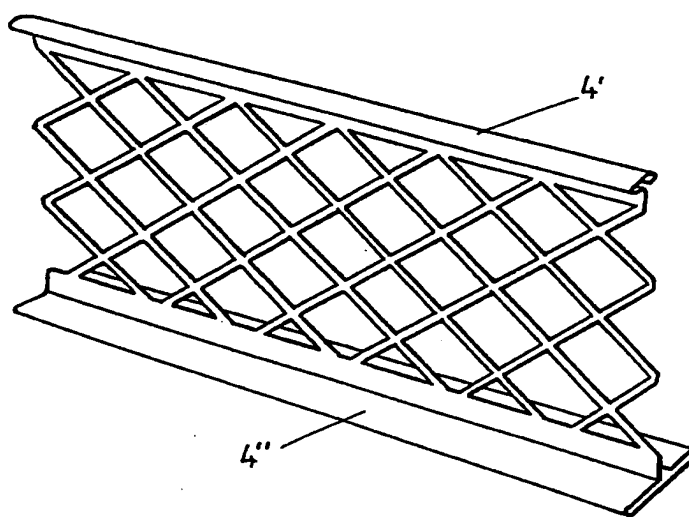


Fig. 11

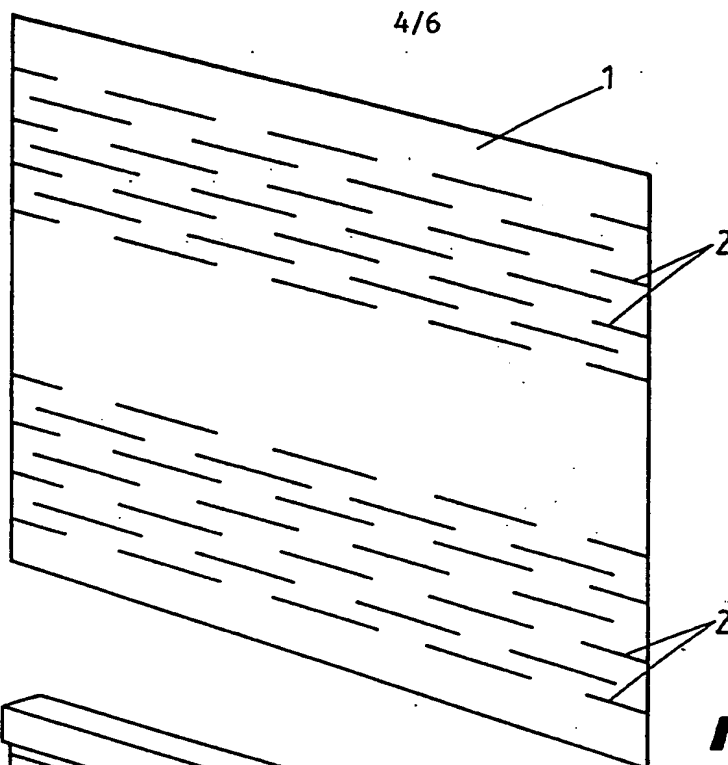


Fig. 12

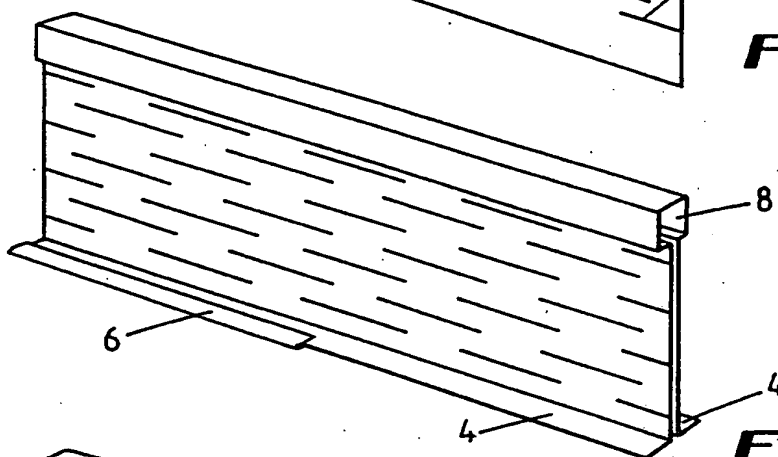


Fig. 13

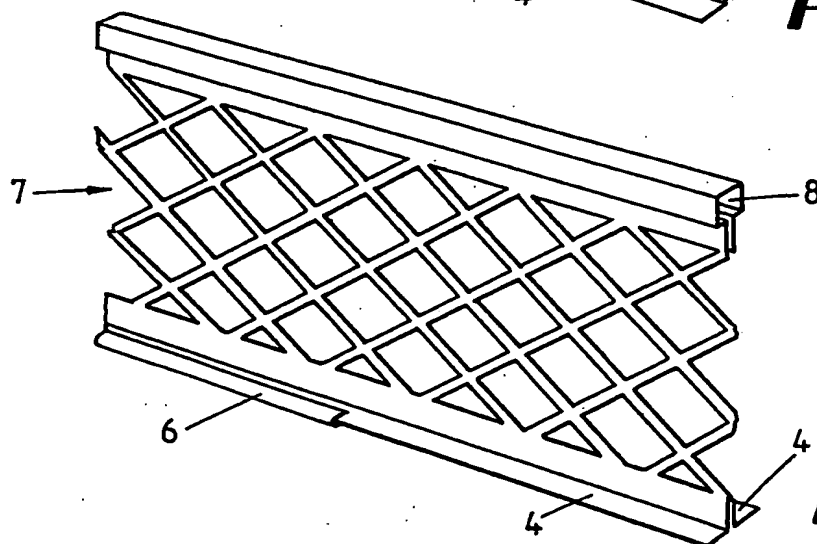


Fig. 14

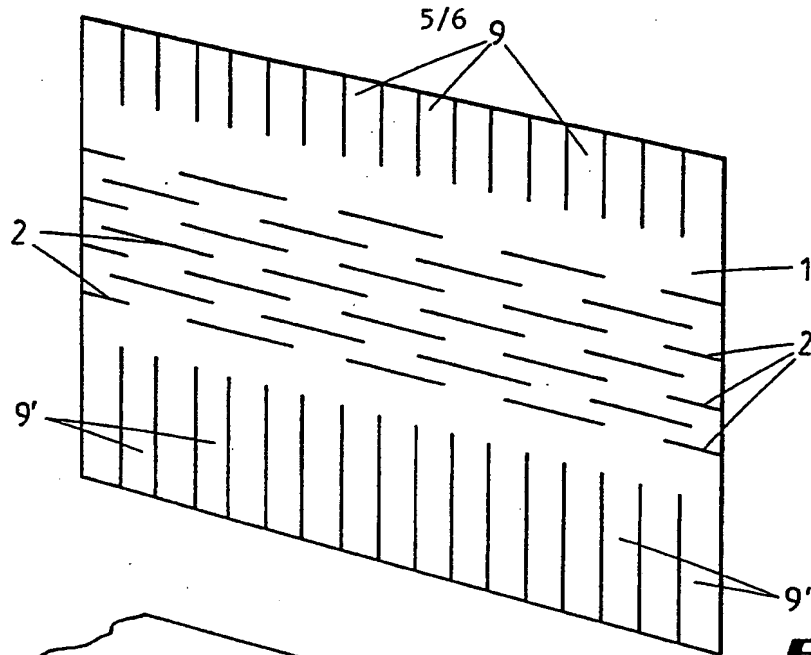


Fig.15

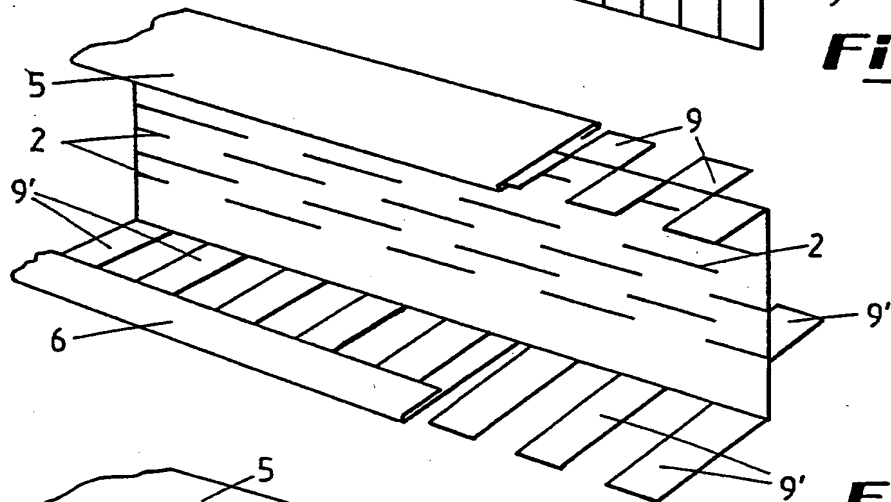


Fig.16

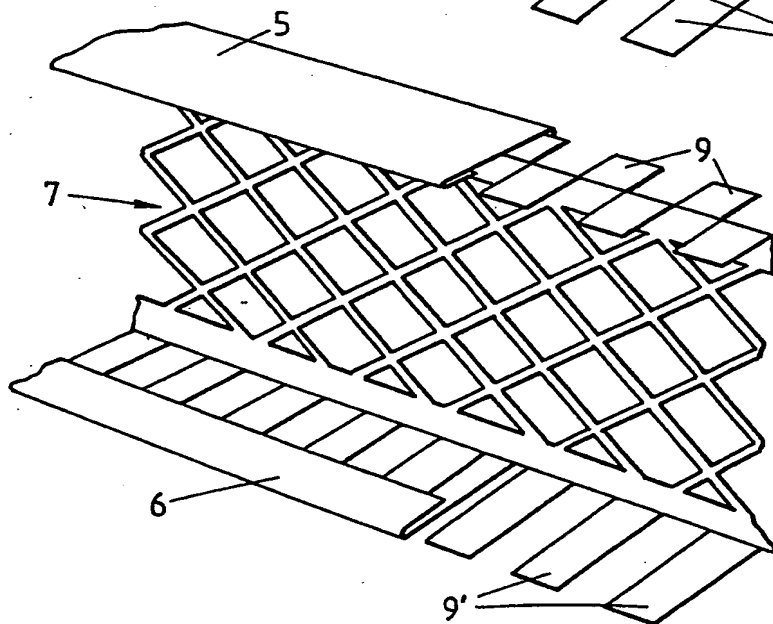


Fig.17

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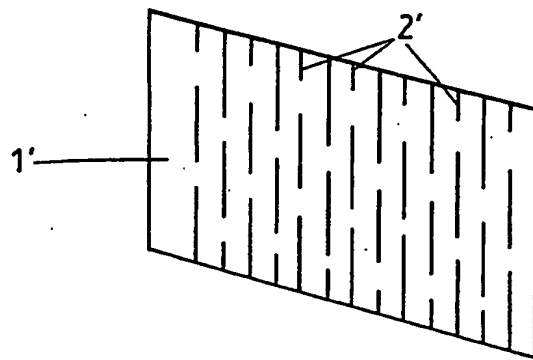


Fig. 18

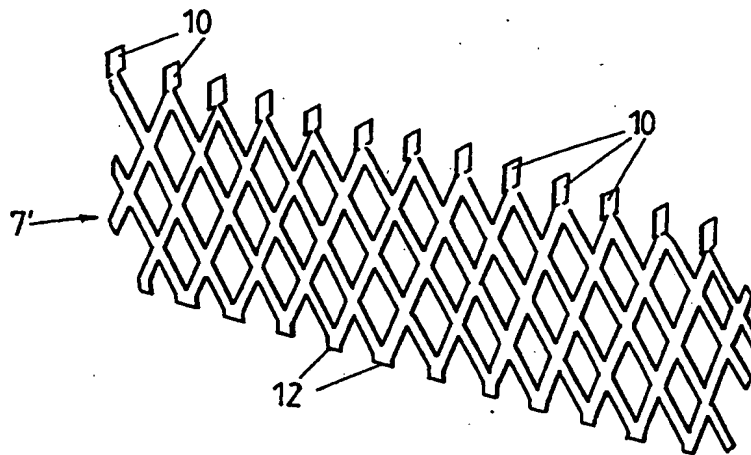


Fig. 19

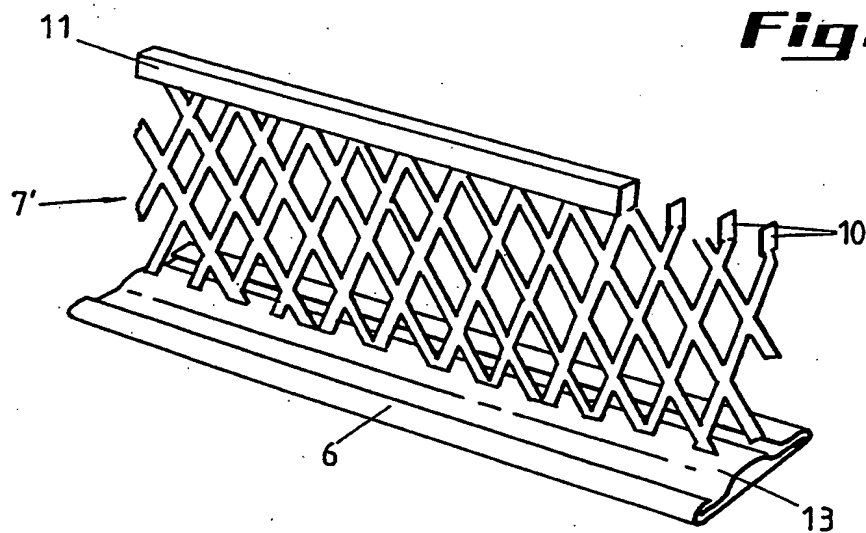


Fig. 20

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E04B 9/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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IPC6: E04B, E04C

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 3812558 (H. WATANABE), 28 May 1974 (28.05.74), column 7, line 26 - column 8, line 18, figures 1-6,25 --	1,2,5
X	GB, A, 2078276 (THE EXPANDED METAL COMPANY LIMITED), 6 January 1982 (06.01.82), page 1, line 32 - line 71, figures 1,2	1,2
Y	--	7,8,9
Y	GB, A, 2128222 (DONN INCORPORATED), 26 April 1984 (26.04.84), the whole document --	7,8,9



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INTERNATIONAL SEARCH REPORT

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3763616 (R. PASTORELLI ET AL), 9 October 1973 (09.10.73), the whole document --	1-6
A	US, A, 3055466 (D.A. BROWN), 25 Sept 1962 (25.09.62), the whole document --	7-10
A	US, A, 4016701 (J.O. BEYNON), 12 April 1977 (12.04.77), column 3, line 23 - column 4, line 7, figures 1,3 -----	7-10

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INTERNATIONAL SEARCH REPORT
Information on patent family members

28/10/96

International application No.
PCT/BE 96/00083

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GB-A- 2078276	06/01/82	NONE	
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US-A- 3055466	25/09/62	NONE	
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